

It still remains to be proved whether *C. nuchalis* really occurs in Mindanao and Mindoro. Dr. Kutter's specimens were obtained in the district of Baatan, to the north of Manila, while all Mr. Whitehead's birds were found in the mountains of the extreme north-east of the island.

PTILOCOLPA CAROLA (Bonap.) ; Grant, Ibis, 1894, p. 521.

Ptilocolpa griseopectus, G. R. Gray, Mus. Brit. 1854 (fide Bonap.).

Carpophaga griseopectus, Salvad. Cat. B. Brit. Mus. xxi. p. 205 (1893).

I have no doubt that *P. griseopectus* is the male and *P. carola* the female of one and the same species. Mr. Whitehead writes :—"The two *Carpophagas* are, in my opinion, of one species, as I have sexed five males, but only two females it is true—still they were shot on the same tree and in company with the others, the second female getting utterly destroyed by the fall. I will shoot any I see, sex, and eat them; but I want some more females, as I have only sent one, and that a bad specimen."

TURTUR DUSSUMIERI (Temm.) ; Salvad. Cat. B. Brit. Mus. xxi. p. 423 (1893).

An immature female.

ANAS LUZONICA, Fraser, P. Z. S. 1839, p. 113 ; Tweedd. Tr. Z. S. ix. p. 242 (1875).

NYCTICORAX MANILLENSIS, Vigors, P. Z. S. 1831, p. 98 ; Steere, List Birds & Mamm. Philipp. Exped. p. 27 (1890).

VIII.—Notes on some Hawaiian Birds.

By R. C. L. PERKINS.

IN 'The Ibis' for January 1893 (pp. 101–112) there were published some notes of mine on collecting in Koua, Hawaii. I propose now to supplement that paper with notes on some of the more interesting birds since observed in other parts of the Hawaiian group, while at the same time I shall have occasion to refer briefly to some of those species noticed in my former paper. In some genera the habits of the slightly

modified species on the different islands are so nearly the same that it would be a mere repetition to detail those of each particular species.

Of the Fringillidæ (nearly all of which are peculiar to the Island of Hawaii) I have already given some account of the habits; but there remains one,—*Pseudonestor xanthophrys*,—peculiar to the Island of Maui, which is perhaps the most remarkable form of all. It is local and rare, and seems to be confined to the highest forest on Haleakala, at an elevation of some 5000 feet above sea-level. Being very tame and apparently unwilling to fly far, I had on several occasions excellent opportunities to learn something of its habits, and especially of the use of its curiously formed and exceedingly powerful beak. The bird has an evident predilection for the koa trees (*Acacia falcata*), and it is from these that it mainly gets its food. This consists of the larvæ of a highly peculiar endemic genus of Longicorn beetles (*Clytarlus*), of which there are in the islands a considerable number of species, nearly all of them attached to the different species of native acacias. The larger ones usually burrow in the main trunks, the smaller in the limbs and twigs above. It is on the larvæ of the latter that *Pseudonestor* feeds and in procuring them has developed the large hooked beak, the powerful jaw-muscles, and heavy skull, which constitute its chief peculiarities. It may be observed that the twigs in which the *Clytarli* have their burrows are not generally rotten, but dry, and of excessive hardness, often surpassing in this respect the still living and unaffected branches. The bird is sluggish, in its movements parrot-like in the extreme, especially in the varied hanging attitudes that it assumes, while the similarity is still further increased by the shape of its beak.

Those that I saw in the act of feeding were generally clinging to the under sides of the thin branches or twigs, the head raised above the upper surface; the point of the curved maxilla was thrust into the burrow, the short mandible opposed thereto, and pressed against the side or under surface of the twig, and the burrow opened out by sheer

strength. All that I shot contained larvæ of these beetles, as many as 20 or 30 being found in the stomach of a single bird. No less than four species of *Clytarus* were found on the acacias in the actual haunts of *Pseudonestor*; these too, like the bird, are all of species peculiar to the same island. When alarmed the bird gave frequent utterance to a short squeaking cry; it has besides a decided song, which reminded me much of that of the green *Himatione*. Once I heard it sing on the wing, as it crossed a gulch*.

The unpleasant scent of *Pseudonestor*, like that of many Drepanididæ and other Hawaiian Finches, is very noticeable.

Looking at the Hawaiian Finches as a whole, it may be noticed how wonderfully the structure of each of them has been specially developed according to the nature of its own particular and most important article of food. Thus, *Pseudonestor*, as above mentioned, has an enormous development of beak and skull and muscles attached thereto, for splitting the koa twigs; *Chloridops* has a huge beak and still heavier skull and muscles, which enable it to crack the hard nuts of the bastard sandal (*Myoporum*); then there is the strong cutting-beak of *Rhodacanthis* for dividing up the koa beans, and a large development of the abdominal portion of the body, in accordance with the large fragments that it swallows; the shorter bill of *Loxioides*, which deftly cuts off the bean of the mamane acacia (*Sophora*), while the bird holding it in position with its foot opens the pod and devours the seeds; and, lastly, the hooked bill of *Psittacirostra*, with which it digs out the separate components of the fleshy inflorescence of the "icie" (*Freycinetia*), for this is certainly its natural food, though it has now come to feed largely on various introduced fruits—guavas, oranges, and the like. Besides their special foods, all the Finches vary their diet at times with the larvæ of Lepidoptera.

Since my note on the habits of *Heterorhynchus wilsoni*, Rothschild, was written, I have had the opportunity of observing those of two other species,—*H. affinis*, Rothschild, on Maui, and *H. hanapepe*, Wilson, on Kauai. Both of them

* See Ibis, 1893, p. 103.

are found in the upper forest, though stragglers may occur at times at lower elevations. Their habits seem to me quite identical; and going straight from the haunts of the one to those of the other, I failed to detect any difference in their songs. At the same time, besides the ordinary song (which resembles that of *H. wilsoni*, the Hawaii species, but is less loud), the Maui bird has a second distinct one, much like that of an introduced *Carpodacus*, which abounds in the same locality and nests there. This is no doubt imitated, as some of the native birds not infrequently sing like some other (native) species, the song of which is quite unlike their own proper one. Their call-note is a sharp "keewit" once or twice repeated and louder than that of other birds in which it is very similar. This the sexes are repeatedly uttering, pausing in their feeding at short intervals for this purpose. Their food consists mainly of various insects, which they procure much in the same way as does *H. wilsoni*, but they are altogether quieter and less vigorous in their movements. In their stomachs I usually found spiders, wood-feeding larvæ of Tinæidæ and Geometridæ, and wood-boring beetles, especially the endemic brassy weevils of the genus *Oodemas*. Sometimes, too, they contained small pieces of lava, no doubt to aid in breaking up the hard shells of the beetles mentioned. That *H. affinis* also sucks honey I obtained decisive evidence, though I never saw it myself; probably all the species do so at times except *H. wilsoni*, which has become more entirely specialized for a Woodpecker's mode of life.

In life, apart from their very distinct song and call-notes, these birds and the *Hemignathi* can readily be distinguished from all the other native species by the extremely short tail in proportion to their total length,—a distinction which the eye can appreciate at distances at which neither the form of the beak nor the colour of the plumage is any longer to be made out. Moreover the *Heterorhynchi* differ in another respect from all the other green birds, for the latter, even in feeding on the limbs of trees, advance by more or less distinct hops, whereas the former regularly creep over the surface of the trunks and branches.

In the genus *Loxops*, which contains the smallest of the native birds, the different species have much the same habits, and the song, which is short and simple, though sweet, is nearly the same in all. Their call is a plain "keewit," uttered once or repeated, and is constantly to be heard. They seek their food amongst the leaves, especially at the ends of the branches, more rarely on the limbs themselves. It consists largely of caterpillars and the smaller spiders. They also suck the nectar of the ohia flowers (*Metrosideros*); this I saw them do but rarely, and only two of the species, *L. aurea* and *L. caruleirostris*. Most often, when seen amongst the blossoms, they were merely seeking insects, thereby attracted; but several times I shot specimens with the beak dripping, and on tasting the fluid found it to be, beyond doubt, the nectar of these flowers.

From the other green birds, their green young and females are readily distinguished, at any height, by their more forked tails, which, combined with their short, thick beaks, give them a very Finch-like aspect.

The young generally follow the parents (some going with the male, and some with the female), who feed them most assiduously even after they appear well able to shift for themselves.

The difference in colour of the sexes is very marked, while the male of *L. aurea* is dimorphic (yellow or red), though with occasional intermediate forms. *L. caruleirostris* of Kauai, so far as colour is concerned, has claim to be considered the primitive form, both sexes largely retaining the green plumage, which only appears in the female and young of the red species on the more southern islands.

On one occasion I saw a pair of *L. aurea* building, high up in a tall ohia tree, toward the end of a branch. They came down to the ground for material, stripping off the brown down that covered the young fronds of some stunted "pulu" ferns. On another occasion I watched a pair sporting on the wing, now ascending, now descending, but gradually rising upwards till they became mere specks in the sky. It must have been several minutes before they finally alighted

at no great distance from their starting-point. Both were splendid males.

The genus *Oreomyza*, like *Himatione*, has a species on each of the six larger islands of the group, which alone, at the present day, have any forest upon them. All the species are green or yellow, except the bright flame-coloured bird on Molokai, and consequently have a great superficial resemblance to the species of *Himatione*.

They are pre-eminently insect-eaters, hunting for these on the trunks and branches of the trees. Their cry is a monotonous 'chip, chip,' which they utter very vociferously when their haunts are intruded upon. It is a little different—rather less sharp—in the species found on Hawaii and Kauai (*O. mana* and *O. bairdi*).

The two *Oreomyza* peculiar to Maui and Lanai (*O. newtoni* and *O. montana*) have a distinct song, short, rather vigorous, but very rarely heard. Apparently they sing only when intensely excited, as, for instance, when one male has been successful in driving off another intruding upon his domain*. On such occasions I have seen the victor rise spirally upwards to a height of from twenty to fifty feet, pouring forth its little song while on the wing, then suddenly darting down again to the concealment of the brush. Very rarely indeed I detected the same species feeding on the nectar of the lehua flowers, and shot them with the beak dripping therewith. *O. mana* of Hawaii generally frequented the tall koa trees, also coming down into the underbrush of bastard sandal; *O. bairdi*, of Kauai, was mostly seen in the lehuas; the other species largely frequented the low brush, being frequently seen amongst the fern-fronds and even on the ground. They feed much on caterpillars and small moths, which they find on the trunks and branches, climbing along the undersides of the latter and up the largest of the former with equal ease. Large moths, when caught, they hold down with their claws, tearing off the wings before eating them. To Owls they have the greatest aversion, and when

* This refers more especially to *Oreomyza montana*. *O. newtoni* I heard sing more frequently.

one flies overhead they become greatly excited, all those in the neighbourhood joining in the clamour. I have seen some twenty or thirty *Oreomyza* gathered around one of these birds, which was sleeping on a dead branch, but they kept at a respectful distance, and did not venture out of the brush. It is highly probable that in past times they were largely preyed on by the Owls, the favourite food of which they possibly were, as they lack the objectionable odour of the other green birds, and the latter never seemed similarly frightened. As to the Owl (*Asio accipitrinus*) itself, it now preys mostly on the introduced mice, which abound, especially on the lower slopes and plains, but at times it may be seen hawking for small birds in parts of the forest where mice are quite absent. Moreover, it was probably much more abundant in past times, as it was never destroyed by the natives, who considered it a most powerful god. The old navigators speak of its great abundance and tameness; but since the settling of the country by white men it has been largely destroyed (though still abundant), since it is given to carrying off the newly-hatched chickens. To this day few natives will shoot at one of these birds.

To one species referred to this genus by Mr. Rothschild in his book ('The Birds of Laysan,' &c.) I have not alluded. This is the *Himatione parva*, of Kauai, which has neither the habits nor appearance of *Oreomyza*, but belongs rightly to the genus in which it was first placed. It is to a great extent a honey-sucker, like its congeners. The slight difference between it and them in the wing-formula is quite insufficient to detach it from its allies. It also has the nasal opercula bare, as in the other members, not overhung with antrorse feathers, like *Oreomyza*. But, apart from this, the formation of the tongue at once shows its proper place. In *Himatione* and *Loxops* this is elongated, very narrow, and terminates in a brush. The lateral margins are bent upwards, to meet in the middle line above, and form a tubular canal, for about half the length of the horny part of the tongue. In *Oreomyza* the tongue is very short and comparatively broad, the sides but slightly raised, and not

nearly meeting above; it is not terminated in a brush, but the apex is cleft in the middle for some considerable depth. *Himatione* and *Loxops* (including *Chrysomitridops*) are at once distinguished from each other by the longer, thinner, more or less curved bill of the former, the beak of *Loxops* being short and thick with the apex of the mandible more or less deflected (either to the right or left), tending to cross the maxilla.

The genus *Palmeria* contains but a single species (*P. doli*), which inhabits the higher forests of both Molokai and Maui, especially the wetter portions, where fog and rain are of constant occurrence. On the latter island the natives call it "akohekohe," but on Molokai several of them gave it the name of "hoe," and by repetition of this word gave a very recognizable imitation of its song, showing thereby that they were well acquainted with the bird. Both in habits and structure the bird reminded me strongly of *Himatione sanguinea*, having the same quick gliding movements amongst the foliage; while the form of its tongue and its whole general appearance (masked only by its curled crest) were equally convincing proofs of its relationship to the same bird.

Generally it frequents the ohia trees, feeding on the abundant nectar of their red blossoms; often the curled feathers of its crest were covered with the entangled pollen-grains of these flowers. It is also very fond of caterpillars and other insects, which it procures both from amongst the foliage and from the dead limbs of the same trees.

Like many other of the birds, it exhibits a mixture of curiosity and timidity at the sight of man; but the former predominates, and it can readily be called by imitating its call-note—a simple, clear whistle—and will approach even within arm's-reach. Its song is highly peculiar, a curious vibrating sound, unlike that of any other native bird. It is this which the natives imitate by the words "hoe, hoe." When in full song (as in other Drepanids, *Vestiaria coccinea*, *Himatione sanguinea*, &c.) several other notes are added, which to the human ear are far from beautiful, having the sound of "glük-glük-glük," rapidly uttered. Many times I heard

the adult male singing its strained song, perched on the topmost bough of some dead ohia, with head upraised, and the swelling of its throat visible even from afar off. Before the breeding-season their call-whistle is constantly to be heard, especially on the approach of fog or rain, when the bird is most easily obtained. They have two other distinct calls besides the whistle—the one a gentle cry, rather like that of *Drepanis*, but softer; the other a “scolding” note, not unlike that of the Olomao (*Phæornis*).

The sexes keep together even after the breeding-season, so that if one is seen its mate is sure to be near at hand.

The young too follow the parent birds, often indeed until they themselves have almost arrived at their full plumage, and long after they have acquired the full song of the adult.

They have the characteristic Drepanid odour, much more marked in some specimens than in others. On Molokai these birds formerly occurred at much lower elevations than they now do. With the destruction of forest by cattle, the mountain rains and fogs have receded, and the birds with them.

As to the habits of *Drepanis funerea**, which inhabits the higher forest of Molokai, and is at present known only from that district, I cannot do better than quote from my notes, made on some occasions when I met with this bird, most of my knowledge of its habits being contained therein.

June 18th, 1893.—“ I had been wading all day in knee-deep mud and working hard all the time with the axe and clearing a path, when suddenly I heard a very different sound, a cry as clear as a bell, with just the least resemblance to that of the ‘Oo’ (*Acrulocercus*). I made sure that I had come across Palmer’s new species †, and was practically certain when I saw fly onward a good-sized black bird. It pitched about 25 yards ahead, but I could not see it for the density of the brush. Every four or five seconds it uttered its re-

* Newton, P. Z. S. 1893, p. 690.

† Mr. Rothschild’s collectors had discovered a new form of “Oo” (*Acrulocercus bishopi*) on Molokai some months before I visited that island.

markable call. I forced through about ten yards, and then I saw the bird clearly, perched across a bough, straight in front of me, and obviously very uneasy. I fired instantly, and the bird dropped straight in thick brush; but I marked a twig it shook in its fall, and gathered it up at once. To my surprise I saw no sign of yellow ear-feathers, nor indeed any yellow feathers at all, but before I had time to fully realize this I heard just ahead the same cry. Throwing down axe and hat, and the bird into the latter, I pushed on, and saw another similar bird, no doubt the mate of the one just shot. It was restless, and I got but a view of its head and part of the body. However, it dropped as straight as the first one, and in a clearer place, so I easily found it. Then I saw at once I had no 'Oo,' but a *Hemignathus*-like creature with shortened mandible, and the excessively strong smell which is characteristic of the Drepanididæ.

"All the feathers on the top of the head of each were covered with a white sticky substance, apparently pollen of some flower, and they are no doubt honey-sucking birds. The cry is not of the loud character of that of the 'Oo,' but is startlingly clear, and could probably be heard at a considerable distance."

June 27th.—"Saw an 'Oo' and *Drepanis* * in the same tree with a number of the red *Himatione*. The 'Oo' was out of voice, and its cry closely resembled that of the *Drepanis*. But for its long tail the former could hardly have been distinguished from the latter in the dense foliage. The 'Oo' many times drove the other from the tree, to which it as invariably returned. In its turn the latter would drive away the red birds, and either one or the other drove off a casual *Palmeria* that came thither." I shot all three, first the "Oo," then *Drepanis*, and lastly the *Palmeria*.

Like the other Drepanididæ, *D. funerea* is also insectivorous. "The specimen obtained I watched for some time before

* I have substituted the name *Drepanis* for the various appellations by which I distinguished these birds in my notes. At the time I considered it a *Hemignathus*, or of a new genus connecting *Hemignathus* with *Drepanis*.

shooting. It was thrusting its bill under the wet moss which covered the tree-trunks, in search of insects. I could tell that the long tongue was being darted in and out, and that so rapidly that it appeared like a liquid streak, the eye not being able to distinguish each separate movement. It had not so silvery an appearance as is familiar in our own Woodpeckers."

These birds, however, feed mainly on nectar, especially of the blossoms of the tree-Lobeliaceæ, which depend on some of the native birds for fertilization. The following, as I believe, are the only species capable of performing this act (at any rate as regards the numerous species of Lobeliads that came under my notice):—*Acrulocercus*, *Drepanis*, *Vestiaria*, and *Hemignathus*. *Himatione*, it is true, also sucks these flowers, but is even detrimental to the plant, as it pilfers the nectar by boring through the base of the corolla. When ripe the pollen is poured out, on irritation, behind the base of the beak, where the bird's head presses the anthers, and may often be seen adhering as a whitish glutinous mass, almost concealing the feathers. After the flower is fertilized, the blossom splits off, leaving the green hemispherical base, which grows into a yellow fruit with innumerable minute seeds scattered through the pulp. It is sweet, but gritty, and as eagerly devoured by the "Ou" (*Psittacirostra*), and by it the seeds are scattered far and wide.

Like most other birds, which have been thrust back to the furthest depths of forest, *Drepanis* is very tame, coming close up out of curiosity, and even perching just overhead, turning its head this way and that to gaze at the intruder.

The three still existing species of *Acrulocercus* differ more or less from each other in their habits. *A. nobilis* on Hawaii usually frequents the loftiest trees, while the Molokai species (*A. bishopi*) is found in the dense tangled brush of the boggy mountain-tops. This may be largely due to the persecution that the former suffered in past times, from those in quest of the yellow feathers, in which the taxes were paid, to be finally made up into capes, cloaks, and helmets for the chiefs. I could not ascertain that the

Molokai species was ever used for the same purpose in spite of its yellow feathers.

Both these species live chiefly on the nectar of the lehua blossoms and the various arborescent lobelias, at times also on the fruit of the banana; and my friend Mr. G. Munro of Kauai assured me that he had shot *Acrulocercus nobilis* while devouring the fleshy inflorescence of the *Freyinetia*.

Both have the same loud, harsh cry, easily heard at a great distance; after the breeding-season, however, and during the moulting period the voice is much less distinct. Except under stress of weather, at least on the leeward side of the island, *A. bishopi* is only found near the backbone of the mountains, having quite disappeared from several large tracts which formerly were well-known haunts of this species. Though shy at the sight of man, this "Oo" will still approach out of curiosity, moving restlessly from branch to branch, at one moment appearing in full view, to as suddenly disappear again beneath the cover of the leaves.

The Kauai species is of very different habits, being mainly insectivorous, though at times sucking honey from flowers. Like the others, it is partial to the Lobeliaceæ, and I several times shot it with its head smeared with sticky pollen-masses derived from those flowers.

It has a clear, sweet song, with which in early morning, and again shortly before dark, the forest is fairly filled. At the same time the resemblance to the cries of the other species is readily detected, though mellowed down and woven into song. The cry of the female, especially when alarmed, is a mere reiterated squeak, so different from that of the male that for a long time I was at a loss to know what bird could produce it.

The form of the bird has become greatly modified by its habits; its tail is comparatively short, with narrow, pointed, and extremely strong feathers. This aids it largely in climbing on the straight trunks of the ohia trees, which it does with ease, pressing the tail firmly against the surface. There, under the loose, large flakes of bark, it finds spiders, cockroaches, crickets, and other insects, which form the

main part of its food. The rattling of this loose bark caused by its bill, when thrust beneath it, is often very plainly heard.

In concluding my notes on Hawaiian birds, I would take this opportunity of correcting some unfortunate mistakes which were overlooked in my former paper*. That there should be some is not to be wondered at, as I had not a book of any sort for reference, and until my return to England I saw no copy of that paper, those sent to me having unfortunately miscarried. For *Psittacirostra psittacea* throughout, read *Loxioides bailleui*, and *vice versâ*. In the same way, *Hemignathus obscurus* and *H. olivaceus* should be transposed, the latter being the bird I now call *H. wilsoni*. For "Akakani," p. 102, read "Akakane"; for "Elepeio," p. 110, "Elepaio"; for "Ona ka ia" (in two places), "Ono ka ia." The Palila, p. 104, is really the name of *Loxioides*, not *Chloridops*; the Ou-po-papale (so written by natives, but probably more correctly Ou-poo-papale) is the yellow-headed male of the *Psittacirostra*.

IX.—*Description of a new Species of Finch of the Genus Crithagra from South-east Africa.* By H. B. TRISTRAM, LL.D., D.D., F.R.S.

IN a small series of skins received some months since from my friend Dr. Percy Rendall, collected by him at Barberton in the Transvaal, were a pair of Finches of the genus *Crithagra*, which I was unable to identify with any known species. Happening to be in London a few days ago, I took the opportunity of showing the birds to Dr. Sharpe and Capt. Shelley, who both agreed with me that the species was, so far as we knew, undescribed. Dr. Percy Rendall tells me he shot the pair out of a small flock which he put up in a piece of scrub some distance from Barberton, and that in all his expeditions he never met with the bird again. The bill seems to me peculiar, very angular, like that of the Greenfinch, but much sharper at its angles and rather compressed laterally. I subjoin the description.

* 'The Ibis,' January 1893, pp. 101. *et seqq.*